UČNI LIST – Logaritem – 1

1) Izračunaj:

a) $\log_2 128 =$

b) $\log_3 \frac{1}{243} =$

c) $\log_2 \frac{1}{512} =$

d) $\log \sqrt[8]{1000} =$

e) $\log_3 \sqrt[5]{81} =$

f) $\log_5 \sqrt[6]{0,008} =$

2) Z uporabo definicije logaritma reši naslednje logaritemske enačbe:

a) $\log_2 16 = x$

b) $\log_{\frac{1}{2}} \frac{1}{4} = x$

c) $\log_{10} 100 = x$

d) $\log_{25} 0,2 = x$

e) $\log_9 27 = x$

f) $\log_3 \frac{1}{27} = x$

3) Z uporabo definicije logaritma reši naslednje logaritemske enačbe:

a) $\log_3 x = 2$

b) $\log_{10} x = -2$

c) $\log_9 x = \frac{3}{2}$

d) $\log_9 x = -\frac{3}{2}$

e) $\log_{125} x = \frac{1}{3}$

f) $\log_{\frac{1}{5}} x = -3$

4) Z uporabo definicije logaritma reši naslednje logaritemske enačbe:

a) $\log_x 16 = 2$

b) $\log_x 9 = -\frac{2}{3}$

c) $\log_x 16 = \frac{4}{3}$

d) $\log_x 27 = \frac{3}{4}$

e) $\log_x 1,25 = -1$

f) $\log_x 0,001 = -3$

5) Logaritmiraj:

a) $\log \frac{a^2 b^3}{c^7} =$

b) $\log \frac{\sqrt[4]{xy^8}}{z^3} =$

c) $\log \frac{a^4}{\sqrt[3]{b^2 c}} =$

d) $\log \sqrt[6]{\frac{x^2}{y^5 z}} =$

6) Izračunaj brez uporabe kalkulatorja:

a) $3 \cdot \log_5 25 + 2 \cdot \log_3 27 - 4 \cdot \log_2 8 =$

b) $\log_3 81 \cdot \log_3 27^{-1} \cdot \log_2 16 \cdot \log_2 8 =$

7) Logaritmiraj:

a) $\log \sqrt[4]{\frac{a^2}{b \cdot \sqrt[3]{c^7}}} =$

b) $\log \frac{100 \cdot \sqrt[3]{x}}{y^4} =$

c) $\log \frac{\sqrt[5]{ab^2}}{10 \cdot \sqrt[3]{c}} =$

d) $\log \frac{(x+2)^5}{x^2 \cdot \sqrt[4]{y^3}} =$

8) Logaritmiraj:

a) $\log \frac{\sqrt[3]{ab^2}}{(a-2)^4} =$

b) $\log \frac{a^6 \cdot \sqrt[4]{b}}{(c+1)^5} =$

c) $\log \frac{1000a^2}{c^3 \cdot \sqrt[4]{b-2}} =$

d) $\log \frac{a^2+4a-12}{\sqrt[5]{a^4b^3}} =$

9) Logaritmiraj:

a) $\log \frac{\sqrt[3]{a^2-5a+4}}{\sqrt[7]{6b^3}} =$

b) $\log \frac{\sqrt{x^2-25}}{\left(x \cdot \sqrt[4]{y}\right)^3} =$

c) $\log \frac{a^3 \cdot \sqrt[5]{b^2}}{\sqrt[3]{a^2-2a-8}} =$

d) $\log \frac{a^2-b^2}{a^2b^2} =$

10) Antilogaritmiraj (izrazi neznanko na levi strani):

a) $\log X = 3\log a + 4\log b - 5\log c$

b) $\log Y = \frac{2}{3}\log a + \frac{1}{3}\log b - \frac{5}{4}\log c$

c) $\log T = \frac{1}{2}\log 6 + \frac{1}{3}\log a - 4\log b - \frac{1}{5}\log c$

d) $\log Z = 2 + \frac{2}{5}\log a - \frac{3}{7}\log b - \frac{5}{7}\log c$

11) Antilogaritmiraj (izrazi neznanko na levi strani):

a) $\log U = 3\log a + 4\log(b-2) - \frac{1}{3}\log c$

b) $\log Z = \frac{1}{4}\log a + \frac{3}{4}\log b - 2\log(c+1)$

c) $\log W = 2 + 5\log(a-3) - \frac{1}{3}\log b - \frac{1}{2}\log c$

d) $\log S = \frac{1}{3}\log(b+2) - 4\log a - \frac{2}{5}\log(c-1)$

12) Antilogaritmiraj (izrazi neznanko na levi strani):

a) $\log X = \frac{3}{4}\log 16 + \frac{1}{3}\log(a+b) - \frac{2}{5}\log a - \frac{3}{5}\log b$

b) $\log Y = \log(a-7) + \log(a+3) - \frac{1}{2}\log a - \frac{3}{2}\log b - \frac{5}{2}\log c$

c) $\log U = \frac{2}{5}\log a + \frac{4}{5}\log b - \frac{1}{5}\log(a-3) - \frac{1}{5}\log(a+3)$

d) $\log Z = 3 + 2\log a + \frac{3}{8}\log b - \frac{1}{6}\log(b+4) - \frac{1}{6}\log(b-2)$

REŠITVE UČNEGA LISTA – Logaritem – 1

1) Izračunaj:
   a) 7
   b) -5
   c) -9
   d) $\frac{3}{8}$
   e) $\frac{4}{5}$
   f) $-\frac{1}{2}$

2) a) $x=4$
   b) $x=2$
   c) $x=2$
   d) $x=-\frac{1}{2}$
   e) $x=\frac{3}{2}$
   f) $x=-3$

3) a) $x=2$
   b) $x=0{,}01$
   c) $x=27$
   d) $x=\frac{1}{27}$
   e) $x=5$
   f) $x=125$

4) a) $x=4$
   b) $x=\frac{1}{27}$
   c) $x=8$
   d) $x=81$
   e) $x=-1$
   f) $x=10$

5) a) $2\log a+3\log b-7\log c$
   b) $\frac{1}{4}\log x+2\log y-3\log z$
   c) $4\log a-\frac{2}{3}\log b-\frac{1}{3}\log c$
   d) $\frac{1}{3}\log x-\frac{5}{6}\log y-\frac{1}{6}\log z$

6) a) 0
   b) -144

7) a) $\frac{1}{2}\log a-\frac{1}{4}\log b-\frac{7}{12}\log c$
   b) $2+\frac{1}{3}\log x-4\log y$
   c) $\frac{1}{5}\log a+\frac{2}{5}\log b-1-\frac{1}{3}\log c$
   d) $5\log(x+2)-2\log x-\frac{3}{4}\log y$

8) a) $\frac{1}{3}\log a+\frac{2}{3}\log b-4\log(a-2)$
   b) $6\log a+\frac{1}{4}\log b-5\log(c+1)$
   c) $3+2\log a-3\log c-\frac{1}{4}\log(b-2)$
   d) $\log(a+6)+\log(a-2)-\frac{4}{5}\log a-\frac{3}{5}\log b$

9) a) $\frac{1}{3}\log(a-4)+\frac{1}{3}\log(a-1)-\frac{1}{7}\log 6-\frac{3}{7}\log b$

b) $\frac{1}{2}\log(x+5)+\frac{1}{2}\log(x-5)-3\log x-\frac{3}{4}\log y$

c) $3\log a+\frac{2}{5}\log b-\frac{1}{3}\log(a-4)-\frac{1}{3}\log(a+2)$

10) a) $X=\dfrac{a^3b^4}{c^5}$

b) $Y=\sqrt[12]{\dfrac{a^8b^4}{c^{15}}}$

c) $T=\dfrac{\sqrt{6}\cdot\sqrt[3]{a}}{b^4\cdot\sqrt[5]{c}}$

d) $Z=\dfrac{100\cdot\sqrt[5]{a^2}}{\sqrt[7]{b^3c^5}}$

11) a) $U=\dfrac{a^3\cdot(b-2)^4}{\sqrt[3]{c}}$

b) $Z=\dfrac{\sqrt[4]{ab^3}}{(c+1)^2}$

c) $W=\dfrac{100\cdot(a-3)^5}{\sqrt[6]{b^2c^3}}$

d) $S=\dfrac{\sqrt[3]{b+2}}{a^4\cdot\sqrt[5]{(c-1)^2}}$

12) a) $X=\dfrac{8\cdot\sqrt[3]{a+b}}{\sqrt[5]{a^2b^3}}$

b) $Y=\dfrac{a^2-4a-21}{\sqrt{ab^3c^5}}$

c) $U=\sqrt[5]{\dfrac{a^2b^4}{a^2-9}}$

d) $Z=\dfrac{1000\cdot a^2\cdot\sqrt[8]{b^3}}{\sqrt[6]{b^2+2b-8}}$